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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,890	10/21/2003	Yoshiharu Iyoda	244147US0	2763

22850 7590 08/24/2007

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EXAMINER	
KESSLER, CHRISTOPHER S	

ART UNIT	PAPER NUMBER
1742	

NOTIFICATION DATE	DELIVERY MODE
08/24/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/688,890	IYODA ET AL.	
	Examiner	Art Unit	
	Christopher Kessler	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16 and 18-33* is/are pending in the application.

4a) Of the above claim(s) *1-9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-16 and 18-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5 June 2007 has been entered.

Status of Claims

2. Responsive to the amendment filed 5 June 2007, claims 10, 11, 18, and 19 are amended and new claims 26-33 are added. Claims 10-16 and 18-33 are currently under examination.

Status of Previous Rejections

3. The examiner finds that the amendments to claims 10, 11, 18 and 19, and new claims 26-33 require new grounds for rejection as stated below.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 30 and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Each of claims 30 and 31 recites the limitation "the resin powder is applied by the thermal treatment." This feature is not present in the original disclosure.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 30 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each of claims 30 and 31 recites the limitation "the resin powder is applied by the thermal treatment." It is unclear what is meant by this limitation. For example, the resin could not be applied to the compact after the compaction step has taken place based on the teachings of the instant specification. The instant specification repeatedly states that the resin is mixed with the powder before compaction.

Claims 30 and 31 are not further treated on the merits.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 10-16, 18-29 and 32-33 are rejected under 35 USC 103 (a) as being unpatentable over Hayashi et al. in view of Kawato et al., taken in view of Lefebvre ('729).

Regarding Claim 10, Hayashi et al. teaches a soft magnetic green compact made from an iron containing powder (col. 2, line 44) and a resin binder powder (col. 7, lines 13-22). The examiner notes that the function of the resin powder taught by Hayashi would inherently possess the claimed property. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

However, Hayashi et al. is silent with regard to compression molding or heat treatment steps, and does not disclose amounts of binder in the range of 0.01-0.50 weight percent after molding.

With regard to the processing steps and binder amounts of Claim 10, Kawato et al. teaches to use less binder when using a compression molding technique than an injection technique, using binder in amounts of 0.1 to 5% when using compression molding (col. 7, lines 55-62), which thus would result in final binder amounts within the range as claimed by Applicant. Kawato further teaches that the advantages of using compression molding include excellent physical properties (see cols. 12-14).

It would have been obvious to one skilled in the art at the time invention was made to use the compression molding and binder range disclosed in Kawato et al., in making the soft magnetic green compact of Hayashi et al. in order to make a magnet with excellent physical properties, as taught by Kawato (see cols. 12-14).

However, neither Hayashi et al. nor Kawato et al. teach a heat treatment in oxidizing ambient to oxidation bond iron powder as claimed. The claims 10-16 and 18-25 are product-by-process claims. It is noted that applicants have disclosed in the specification that the claimed processing limitation of oxidation bonding led to different properties in the product claimed.

Lefebvre ('729) discloses that in a soft magnetic green compact, the oxidation bonding between iron powder particles obtained by heating in oxidizing atmospheres provides enhanced strength (see cols. 2-3, and Claim 1). Lefebvre teaches that the

particles are bonded to one another, meeting the limitation of directly bonded (see cols. 2-3, and Claim 1).

It would have been obvious to one skilled in the art at the time invention was made to use the compression molding and binder range disclosed in Kawato et al., in making the soft magnetic green compact of Hayashi et al. in order to make a magnet with excellent physical properties, as taught by Kawato (see cols. 12-14), and further to employ the oxidation bonding disclosed by Lefebvre ('729), in order to make a soft magnetic green compact that had oxidation bonding to provide enhanced strength compared to resin bonded compacts, as disclosed by Lefebvre ('729) (cited above).

Regarding Claim 11, Hayashi et al., Kawato et al., and Lefebvre ('729) are applied to the claim for the same reasons as stated above.

Neither Hayashi et al. nor Kawato et al. teach a soft magnetic green compact including an iron system powder with an insulation coating.

With regard to the limitation of iron powder with insulation coating, Lefebvre ('729) discloses that in a soft magnetic green compact, the iron powder particles may be insulated with a coating of oxide, that is bonded together to form a continuous coating (see cols. 2-3).

Regarding Claim 12, Hayashi et al. teaches the use of various resin materials, including a polyamide system resin (col. 7, line 13-22). Kawato et al. and Lefebvre ('729) are relied upon as described above. With regard to the limitation imposed that the binder powder be less than 200 μm, Hayashi et al. recommends that the particle

size of recycled magnet material be ground to less than that size in order to process the material (see col. 7, lines 13-22).

It would have been obvious to one skilled in the art at the time invention was made to make a soft magnetic green compact with polyamide materials in resin binders as taught by Hayashi in order to enhance the strength and make the compact easier to handle, and to use polymer powder with particle size less than that of the magnetic powder in order to facilitate molding.

In regards to Claim 13, Hayashi et al. teaches the use of a resin with thermoplastic and thermosetting components (col. 7, lines 13-22). Kawato et al. and Lefebvre ('729) are relied upon as discussed in the previous rejections.

Hayashi is silent with regard to the melting point of the thermoplastic component of the resin.

Kawato et al. refers to the thermoplastic resin preferably having a melting point of at least 200° C (see col. 25 line 65-col. 26, line 19).

It would have been obvious to one skilled in the art at the time of invention to prepare a soft magnetic green compact with resin containing both thermoplastic and thermosetting components as taught by Hayashi in order to enhance strength and ease of manufacture.

Regarding Claim 14, Hayashi et al. teaches the use of various resin materials, including a polyphenylene sulfide system resin (col. 7, line 13-22). Kawato et al. and Lefebvre ('729) are relied upon as discussed in the previous rejections.

It would have been obvious to one skilled in the art at the time invention was made to prepare a soft magnetic green compact with polyphenylene sulfide as taught by Hayashi in order to provide enhanced strength and ease of manufacture.

Regarding Claim 15, Hayashi et al. and Kawato et al. are relied upon as discussed above.

Neither Hayashi et al. nor Kawato et al. teaches the heat treatment of soft magnetic green compacts in oxidizing ambient.

Lefebvre ('729) teaches heat treating soft magnetic green compacts in oxidizing ambient at temperatures falling within the range 100-450° C to encourage oxidization of the metal powder compacts in order to enhance strength (see col. 5, lines 4-17).

It would have been obvious to one skilled in the art at the time invention was made to heat treat a soft magnetic green compact with oxidizing atmosphere at temperature in the range of 100-450° C, as taught by Lefebvre ('729) in order to enhance the strength, as disclosed by Lefebvre ('729) cited above.

With respect to Claim 16, Hayashi et al. and Kawato et al. are relied upon as discussed above.

Neither Kawato et al. nor Hayashi et al. disclose soft magnetic green compacts with density in the range of 6.6-7.4 g/cm^3.

Lefebvre ('729) discloses soft magnetic green compacts strengthened with oxidation bonding that have density values that fall into the range of 6.6-7.4 g/cm^3 (see col. 6, Table 1).

It would have been obvious to one skilled in the art at the time invention was made to make a soft magnetic green compact with high relative density as taught by Lefebvre ('729) in order to enhance the strength.

Regarding Claim 18, Hayashi et al., Kawato et al., and Lefebvre ('729) are applied to the claim as stated above.

In regards to Claim 19, Hayashi et al., Kawato et al., and Lefebvre ('729) are applied to the claim as stated above.

Regarding Claim 20, Hayashi et al. and Kawato et al. are relied upon as discussed above.

Neither Hayashi et al. nor Kawato et al. teaches the heat treatment of soft magnetic green compacts in oxidizing ambient.

Lefebvre ('729) teaches heat treating soft magnetic green compacts in oxidizing ambient at temperatures less than 300° C to encourage oxidization of the metal powder compacts (see col. 5, lines 4-17).

It would have been obvious to one skilled in the art at the time invention was made to heat treat a soft magnetic green compact with oxidizing atmosphere at temperature in the range of 250-450° C in order to enhance the strength, as taught by Lefebvre ('729).

With respect to Claim 21, Hayashi et al. and Kawato et al.applied to the claim for the same reasons stated above.

Neither Hayashi et al. nor Kawato et al. teaches the heat treatment of soft magnetic green compacts in oxidizing ambient.

Lefebvre ('729) teaches heat treating soft magnetic green compacts made from iron powder particles with insulating coating in oxidizing ambient at temperatures less than 600° C to encourage oxidization bonding (see col. 5, lines 4-17).

It would have been obvious to one skilled in the art at the time invention was made to heat treat a soft magnetic green compact with oxidizing atmosphere at temperature in the range of 250-450° C in order to enhance the strength, as taught by Lefebvre ('729).

Regarding Claim 22, Hayashi et al. and Kawato et al. are relied upon as discussed above.

Neither Hayashi et al. nor Kawato et al. teaches the use of phosphoric acid to create an iron phosphate coating.

The use of phosphoric acid to form an insulating layer on the surface of iron powder is well known in the art. For example, Lefebvre ('729) discloses phosphatation of the iron powder to be made into a soft magnetic green compact (see col. 4, lines 38-39).

It would have been obvious to one skilled in the art at the time invention was made to treat iron powder with phosphoric acid and other chemicals to create a thin insulation film, as taught by Lefebvre ('729) and others, in order to protect the magnetic properties of the iron powder to be used for a soft magnetic green compact, as shown in Lefebvre ('729), cited above.

Regarding Claim 23, Hayashi et al. and Kawato et al. and Lefebvre ('729) are applied to the claim as stated above.

It would have been obvious to one skilled in the art at the time invention was made to create a soft magnetic green compact with coated insulative layer and oxidation bonding in order to provide enhanced strength at high temperature as taught by Lefebvre ('729).

With respect to Claim 24, Hayashi et al. is relied upon as stated in previous paragraphs. Lefebvre ('729) is relied upon as stated above.

Hayashi does not disclose a composition of resin powder within the range of 0.10-3.00 weight percent.

Kawato et al. teaches the use of resin amounts that overlap the claimed range (see col. 7, lines 55-62).

It would have been obvious to one skilled in the art at the time of invention to create a soft magnetic green compact with resin binder falling within the range of 0.10-3.00 weight percent as taught by Kawato et al. in order to make a soft magnetic green compact stronger and easier to manufacture.

Regarding Claim 25, Hayashi et al., Kawato et al. and Lefebvre ('729) are applied to the claim for the reasons stated above.

It would have been obvious to one skilled in the art at the time of invention to create a soft magnetic green compact with resin binder falling within the range of 0.10-3.00 weight percent as taught by Kawato et al. in order to make a soft magnetic green compact stronger and easier to manufacture.

Regarding claim 26, Hayashi et al., Kawato et al., and Lefebvre ('729) are applied to the claim as stated above. Lefebvre ('729) further teaches that an oxide insulation coating is formed around the powder (see cols. 2-3).

Regarding claim 27, Hayashi et al., Kawato et al., and Lefebvre ('729) are applied to the claim as stated above. Lefebvre ('729) further teaches that an oxide insulation coating is formed around the powder (see cols. 2-3).

Regarding claims 28 and 29, Hayashi et al., Kawato et al., and Lefebvre ('729) are applied to the claim as stated above. Lefebvre ('729) further teaches that an oxide insulation coating is formed around the powder (see cols. 2-3). The absence of any binder particles between the oxide insulating layer and the iron containing powder particles would be an inherent property of the soft metallic green compact formed by oxidation bonding taught by Lefebvre ('729). Applicant is further directed to MPEP 2112.01.

Regarding claims 32 and 33, Hayashi et al., Kawato et al., and Lefebvre ('729) are applied to the claim as stated above. Kawato et al. teaches to use less binder when using a compression molding technique than an injection technique, using binder in amounts of 0.1 to 5% when using compression molding (col. 7, lines 55-62), which thus would result in final binder amounts within the range as claimed by Applicant. Kawato further teaches that the advantages of using compression molding include excellent physical properties (see cols. 12-14).

It would have been obvious to one of ordinary skill in the art at time of invention to have selected a resin amount in the range of from about 0.010-3.00 weight percent

because Kawato teaches the same utility over the entire range. The use of such resin amounts would inherently result in a green compactwith resin in amounts of 0.010-0.5 weight percent after processing in the manner described above (see MPEP 2112.01).

Response to Arguments

10. Applicant's arguments filed 5 June 2007 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine the references is stated above.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant has stated on page 13 of the Remarks filed 5 June 2007 that the Advisory Action of 21 February 2007 "fails to identify a reason why one of ordinary skill in the art would combine the references as proposed." The Advisory Action of 21 February 2007 clearly states that the claims are rejected for the same reasons applied in the Office Action of 4 October 2006. The motivation to combine the references is stated above.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Kessler whose telephone number is (571) 272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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